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RECENT SOVIET CONFERENCES ON  
CLIMATOLOGY AND ACCLIMITIZATION

- USSR -

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## FOREWORD

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RECENT SOVIET CONFERENCES ON  
CLIMATOLOGY AND ACCLIMITIZATION

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## CONFERENCE ON AGRO-CLIMATIC RESOURCES

--USSR--

The following is the translation of an article by G.D. Rikhter and S.S. Sabina in *Izvestiya Akademii nauk SSSR; Seriya geograficheskaya* Proceedings of The Academy of Sciences of the USSR; Geographical Series) No. 2, March-April, 1961, pp. 123-125.

From 22-27 November 1960, a scientific conference took place on questions of the agro-climatological bases for the distribution and specialization of agriculture. Agro-climatologists, geographers, physiologists, and economists participated in the conference. Among the participants of the conference were scientists from the People's Democracies represented, for the most part, by specialists in agricultural economics.

In the addresses heard at the meetings diverse questions were widely discussed relating to the given problem. In the main, results were delivered on the great research conducted in the All-Union Academy for Agricultural Sciences imeni V. I. Lenin, the All-Union Institute for Plant Cultivation, the Central Institute for Forecasting, the Council for Study of the Productive Forces of the State Economic Council (Goskonomsob) of the USSR, the Leningrad Agricultural Institute, the Main Geophysical Observatory, and also in various scientific research institutes of the Union republics.

Opening the conference, Academician P. M. Zhukovskiy noted the great significance of correct calculation and of the most effective utilization of natural resources for the increase of agricultural production. Currently vast thermal and water resources remain unexploited in agriculture. So, for example, around 60% of the heat reserves are utilized in the Northern Caucasus and only 50% of the rainfall.

It should be pointed out that the unexploited heat and moisture reserves which are enough for a second harvest, not only are lost to agriculture but also inflict substantial losses as, because of them, the weed growth thrives.

The second important reserve for the rise in agriculture is the utilization of the internal resources of the plants themselves for the exposition of which specialists in plant physiology should be recruited.

At the current stage of the increase in agriculture, especially important significance is attached to the idea of exploiting the

mutually compensating regime of climatic conditions of diverse rayons.

In the rational adaptation to the natural conditions and also in the utilization of the internal resources of the plants themselves vast unexploited reserves are wasting away.

One of the number one tasks of scientific stock-taking of natural resources is the division into agro-climatic rayons [rayonirovaniye].

Problems of agro-climatic division into rayons for the purposes of distributing and specializing agricultural production acquire especially important significance in connection with the composition and development of the prospective plan for the development of the national economy of the USSR.

The conference pointed out that the investigations in the field of agro-climatology are being conducted mainly in two directions:

- (1) the development of theoretical bases for the agro-climatological bases for the distribution and specialization of agriculture, and
- (2) the exposition and evaluation of agro-climatic resources of the territory for specific agricultural crops.

In the first direction significant work has been done by the combined efforts of specialists of the scientific research institutes of the Lenin Academy of Agricultural Sciences, the Hydro-Meteorological Service (Gidrometeosluzhba), the Ministry of Agriculture of the USSR and other scientific institutes and establishments. The results of these investigations were communicated at the conference in addresses by F. F. Davitaya, I. I. Nikishin, G. T. Selyaninov, P. I. Koloskov, S. A. Sapozhnikova, D. I. Shashko, and others.

F. F. Davitaya disclosed the basic stages in the development of agro-climatology in the USSR. Now the development of this science has acquired broad dimensions and has received new directions of principles; the scientific basis for these new directions was arranged in particular by workers G. T. Selyaninov and P. I. Koloskov. In recent years many major projects have been done on the agro-climatic basis of the rational distribution and specialization of separate branches of agriculture; agro-climatic handbooks have been put together and published on the most important oblasts in the country in regard to agriculture; and agricultural maps have been put out. As a result of the elaboration of the problem, specific measures have been suggested directed at the utilization of the agro-climatic resources; the realization of this could have a great practical effect.

I. I. Nikishin reported on the work in natural-economic rayon divisioning conducted in the Council for Study of the Productive Forces of the State Economic Council of the USSR. In a map which he presented of the natural economic regions are depicted the larger unit mesorayons composed of groups of administrative oblasts united by their natural conditions and at the same time reflecting the place of each in the national economy. The largest units—the macrorayons, the basic natural zones, are not shown on the map. The second class of rayon divisioning is the natural economic microrayon composed of a group of administrative rayons united by their sharing of natural and economic conditions and singled out from the others mainly by the principle of soil conditions

which reflect the whole natural complex. Statistics of the elaboration of economic indicators are shown on the 546 microrayons.

G. T. Selyaninov expounded the theoretical bases which he had worked out for agro-climatic districting in the USSR for purposes of distribution and specialization of agricultural production. At the base of the agricultural evaluation of climate are the indicators characterizing the thermal resources of the territory and also the indicators reflecting the factors which hinder the exploitation of thermal resources, namely the insufficiency or surplus of moisture and frosts and wintering conditions; these characteristics supplement the evaluation of the thermal resources of agriculture. In the basic rayon unit, agro-climatic belts are shown, laid out on the oblasts and the latter, on the provinces. In all, on the territory of the USSR, 32 agro-climatic provinces are singled out. An attempt has been made to combine on the map the climatological indicators with the soil types and the productivity of agricultural plants in the form of average annual harvests.

A world, agro-climatic map composed by G. T. Selyaninov on the same principles was shown and permitted a comparison of the agro-climatological conditions of various countries.

P. I. Koloskov demonstrated a "Map of Agro-Climatic Districting of the Territory of the USSR for the Goals of Agriculture" which he had prepared. This map, as its author noted, presents the results of the first divisioning and might be used as a climatological basis for agro-climatic rayonification.

The territory of the USSR is divided into belts according to the temperature conditions of the warm period and the belts in turn are divided into zones according to the conditions of moisture and the character of their soil cover. The subdivisions of the zones into oblasts are based on temperature conditions of the cold period of the year, and the oblasts are grouped into okrugs on the basis of the average strength of the snow cover which characterizes the wintering conditions for the plants and the spring dampening of the soils.

The "World Map of Climatic Districts for the Goals of Agriculture of the USSR" which is still in the first stage of development was offered to reveal world climatological analogies to the separate districts of the USSR.

The results of these interesting investigations conducted together with the scientific research institutes of aeroclimatology and the Council for the Study of the Productive Forces of the State Economic Council of the USSR were presented in addresses of D. I. Shashko and S. A. Sapozhnikova.

A wall map of agro-climatic resources was presented to the conference by S. A. Sapozhnikova. The agro-climatic resources can be broken down into heat and moisture each of which is evaluated for its peculiarities both in the vegetation period and in the severity of winter conditions determining the winter adaptability of perennials and winter crops.

To characterize the agro-climatic conditions, D. I. Shashko used a coefficient of climate equal to the productivity for given moisture

per unit of thermal resource (the sum of temperatures higher than 10 degrees expressed in hundreds of degrees). This indicator can be used for the evaluation of the bounty of agricultural lands in the mean. The estimates of productivity of climate and the rayonification of the USSR worked out on the basis of them are applicable to grain crops.

Questions connected with the evaluation of the feeding base of the USSR for the development and increase in the livestock branch of agriculture were considered in the richly illustrated address of academician I. V. Larin.

The careful analysis of the natural feed lands showed that without complicated ameliorative changes it is possible to create crop pasturage and haying on an area of more than 60 million hectares which will permit an increase in the current livestock herds and poultry of not less than 75%.

The evaluation of the agro-climatic conditions in the remote-pasture livestock husbandry of Kazakhstan, conducted in the Kazakh Hydro-Meteorological Institute was given in the address of A. P. Fedoseyev.

The results of the investigations conducted in the direction of the agro-climatological basis of the distribution and specialization of separate agricultural crops, in particular, maize, flax, potatoes, wheat, and rye, were considered in a series of addresses by S. A. Sapozhnikova, (NIAK -- ?), I. A. Sizov (VIR -- Vsesoyuznyy institute rasteniyevodstva; All-Union Plant Cultivation Institute), A. I. Rudenko (VIR), N. N. Yakovlev (VIR), and others. Arising out of the needs of specific agricultural crops for heat and moisture, agro-climatological evaluations of the territory are being conducted from the point of view of the optimal distribution of a given crop with the goal of getting the largest and most stable harvests. As a result it has been established that through the rational distribution of agricultural crops we can get supplementary harvests which amount to a significant proportion of the total harvest. Such research permits the opening up of new areas for cultivation of these or other crops in the territory of the USSR.

The results of research dealing with the given problem were expounded in the address of A. M. Alpat'yev. This was devoted to the elaboration of the bases of a new so-called bio-climatic classification of plants according to their water consumption. Stemming from the essential characteristic of water demand of plants, two criteria are suggested for the basis of classification: the total water demand by the plants in the entire vegetation period and also their rate of growth and development.

Much interest was evoked from the audience also by the address of A. V. Protserov on the agro-climatological evaluation of the productivity of machines in time of grain crop harvests in the territory of the USSR. As was noted in opinions expressed during the discussion of the address, proper research opens wide possibilities for closer contacts between the agro-climatologists and economists with the aim of planning agricultural operations and their norms depending on the geographical situation of the district.

Thus, the conference showed that until the present time many jobs, both for the territory of the Soviet Union as a whole and for the separate republics and oblasts, have been executed in the indicated directions. However, as was noted, inspite of the successes achieved in the area of agro-climatology, until now there has not been an agro-climatological indicator which could be considered composite, i.e., to reflect on one side the connection between hydro-meteorological conditions and the water and heat requirements of plants and, to be based, on the other, on the utilization of current accomplishments in the field of the development of a method of heat balance. In connection with this, the indicated problem demands further research.

The conference not only brought out the results in the area of the development of the given problem but also noted the further path for research the results of which will aid in the satisfaction of the growing demands of the national economy which face the agro-climatologists.



## CONFERENCE ON PROBLEMS OF COMPOSITE CLIMATOLOGY

-USSR-

Following is the translation of an unsigned article in  
Izvestiya Akademiiy Nauk SSSR; Seriya geograficheskaya  
No. 2, March-April, 1961, pp 125-128.

From 16-19 December 1960, a conference took place on questions of complex climatology at the Institute of Geography of the Academy of Sciences USSR. The conference was called at the initiative of the Department of Climatology of The Institute of Geography of the Academy of Sciences USSR and timed to coincide with the 50th year of scientific activity and the 80th birthday of the founder of complex climatology, Corresponding Member of the Academy of Sciences USSR, Yevgraf Yevgrafovich Fedorov.

The basic problem of the conference was the broad exchange of results of research on the theory and practical application of complex climatology and the working out of plans and prospects for development of scientific research in the near future.

Representatives of the geographic institutions of the Academy of Sciences USSR and the Academies of Sciences of the Union Republics, geographical chairs of a number of universities, scientific research institutes of the hydro-meteorological service, the Academy of Building and Architecture, the Central Institute for Health Resorts and Physical Therapy, and other establishments participated in the work of the conference. Twenty-seven addresses on various problems of composite climatology were heard.

The conference was opened by Deputy Director of the Institute of Geography of the Academy of Sciences USSR, M. I. Neyshadt and the leader of the Department of Climatology of the Institute, B. L. Dzerdzyvskiy.

In the basic address of Ye. Ye. Fedorov and L. A. Chubukov (of the Institute of Geography of the Academy of Sciences USSR) on the theme "The Theoretical Bases, Development, and Contemporary State of Composite Climatology," the contemporary state and also the fundamental ideas of composite climatology were elucidated. To the number of the latter belongs the concept of weather as an integral natural phenomenon, the composite influence of weather on the development of the animal world, and the idea of climate as a long term weather system. The speakers also described the operational method of climatological analysis in

their appendix to the problem of the origin of local weather and the principles of research on it to solve many kinds of problems of a practical character.

Further work of the conferences was elaborated in five groups of addresses devoted to various questions of composite climatology.

Eight addresses were devoted to the analysis of origins for local weather formation.

In a joint address, A. P. Gal'tsov and I. S. Glukh (of the Institute of Geography of the Academy of Sciences gave USSR) "On the Question of the Origin of Composite Weather Patterns" the results of a statistical elucidation of the connections existing between the magnitude of various meteorological components (temperature, relative humidity, cloudiness, wind) and also the connections of these magnitudes with the changes of the elements in time describing different types of physical processes. V. M. Zhukov (of the Institute of Geography of the Academy of Sciences USSR) showed in his address entitled "Processes of the Formation of Local Weather in Trans Baykal area /Zabaykal/ in the Conditions of the Siberian Anticyclone" that the dynamics and direction of the processes of local weather formation in western Trans Baykal are formed by the recurrence of natural weather periods, the pattern of incursion, their intensity, the duration of the process of transformation depending on the dynamic causes and local natural conditions (especially relief, the influence of the Baykal Island, etc.). The speaker showed that in warm incursions two mutually exclusive processes are observed in which the warm downdraft is weakened by the processes of cooling off. In cold incursions on the other hand, complementary or mutually reinforcing processes are observed which lead to the formation of strong and cruel freezing weather.

The address of Yu. N. Shvareva (of the Institute of Geography of the AS /Academy of Sciences/ USSR) "On the Problem of Radiation Characteristics of the Most Important Classes of Local Weather" contained descriptions of the most important kinds of local weather worked out on the basis of materials from the observatory of the Moscow University over the period January-July, 1957-1959. A table was presented of data for a number of hours on average, maximum, and minimum values of sunlight and concentrated and diffused radiation [summarnaya i rasseyannaya radiatsii] and also on the radiation balance.

A. D. Eyyubov (of the Institute of Geography of the AS USSR) in an address entitled "The Change in Local Weather at the Incursion of Cold Air Masses in Winter in the Plains and Mountain Rayons of Azerbaydzhan" presented the classification of cold incursions by their intensity. Thus, the formation of violently cold weather in the high mountain and very cold weather in the middle mountain rayons of Azerbaydzhan originate in intensive cold incursions. In the incursions of average intensity very cold weather forms in the mountain rayons and moderate cold in the plains. The weak incursion leads to the formation of weak and moderately cold weather in the mountains, and on the plains to weather with transition in temperature through zero degrees. In the address the role of the Caucasus range and the Caspian Sea in the

purposes. The conditions for holding sun baths was worked out on the basic scheme of N. Z. Mikhaylov, and coordination of the typological peculiarities of weather with a number of biochemical changes reflecting the character of the oxidation replenishing processes was covered.

I. V. But'yeva (Central Institute for Health Resorts and Physio-Therapy) demonstrated that the health resorts concerned do not have a essential differences in the warm period in an address on "Comparative Characteristics of Climate and the Evaluation of the Meteorological Conditions of Climatic Therapy at the Kislovodsk and Yesentuki Health Resorts. The differences occur in the cold and transition periods of the year when the most beneficial weather conditions take shape at the Kislovodsk health resort. In this, sun bathing has been investigated according to the classifications of V. G. Pozdeyev, S. N. Rubinskiy and N. Z. Mikhaylov. The classifications originate in different gradations of equivalent-effective temperatures which describe the meteorological conditions of the heat sensations of the sick.

In the address of Ye. M. Il'cheva (Central Institute for Health Resorts and Physio-Therapy) on "An Experiment in the Bio-Climatological Interpretation of Weather Types," several types of weather were considered in conformity with hospital practice using the example of the weather conditions of Krasnaya Pakhra and Yevpatoriya.

T. G. Shveynova (Central Institute of Health Resorts and Physio-Therapy) gave a comparative evaluation of the equivalent-effective temperature conditions in an address entitled "On the Problem of a Comparative Evaluation of the Heat Sensations of Man in the Conditions of the Large City and the Suburban Areas (using the example of Moscow and the "Mikhaylovskoye" sanatorium)." Analysis of the data received showed what great differences are achieved by the equivalent-effective temperature values in the inter-mass processes in the conditions of sunny, cloudless weather at various points.

A number of addresses were specially devoted to the evaluation of the climate of the Union Republics. Thus, R. A. Bagdasaryan (Institute of Health Resorts of Armenian SSR) described the climate of the Armenian SSR health resorts, K. V. Kolonnets (Odessa Institute for Health Resorts and Physio-Therapy) gave an address on the structure of the climate at several resorts of the Ukrainian SSR. Concerned were the kinds of weather and the various gradations of irritation levels reflecting the influence of weather on the condition of the human organism. A. A. Rayk (Tartu State University) showed the weather conditions of climatic therapy at the Pyarny health resort. V. I. Rusanov (Tomskiy Institute for Health Resorts and Physio-Therapy) described the peculiarities of climate in the weather of Western Siberia.

A third group of addresses was devoted to comparative analysis, the determination of climatic resources, and the application of composite climatology to the national economy.

In a paper on "The Application of Composite Characteristics for the Evaluation of Solar Resources," A. B. Bagdasaryan (Armenian Academy of Science) there was an interesting scheme for using composite weather patterns in cadastral surveys of solar energy. For the purposes of a

cadastration it is necessary to include data on the intensity of solar radiation and the number of hours of sunlight. In this way we will get data on daily duration which will permit us to relate composite patterns to the efficiency of individual solar patterns. There is equal practical interest in a study of the stability of weather patterns and their regularity which can be easily deduced from application of composite weather patterns.

A means of describing the recurrence of weather classes on the abscissa and the weather patterns on the ordinate axis was offered by N. N. Galakhov (Institute of Geography of the AS USSR) in a paper entitled "Comparative Analysis of the Climatic Structure in the Weather and Seasons of the Year". Such a graphic device permits a depicting seasonal climatic structure in weather in an easily readable format suitable for comparative analysis. The dominant kind of weather is singled out as a unique pattern and the single general trend of climate determining processes in a season is shown. In this class is determined the dominant weather pattern, the formation of which is characterized at the beginning of the season. The season and their duration are divided according to the indicated principle into three climatic belts: subarctic (Salekhard), temperate (Barnaul), and subtropical (Tashkent).

In a paper entitled "The Utilization of Methods of Composite Climatology in the Evaluation of the Severity of Weather and The Determination of the Conditions of the Working Period in the Cold Half-Year on the Basis of the North-Eastern USSR," N. K. Klyukin (Magadanskaya Hydro-Meteorological Observatory) observed that the heat needs of man are not fully reflected in the formula for weather severity according to Bodman although it can serve as a criterion for the distribution of forests. The speaker expounded his own method for determining conditions which demand stopping work and allotting breaks for the people to warm themselves, a practice tested for more than a decade at the enterprises of the north-east. It was observed in the paper that it was necessary to have a spatial description of composite climatic characteristics.

Papers by the following were also heard: A. F. Bushmanov (Sverdlovskiy Pedagogical Institute) on "Autumn Frosts in the Central Urals Depending on the Character of Local Weather;" Yu. I. Klyuchnikov (Kazakh State University) on "The Most Important Climatic Distinctions in the Altay Weather;" Kh. A. Zakiyev (Rostov State University) on "The Circulation of the Atmosphere, Local Weather Conditions, and the Composition of Glaciers," (in this paper were discussed two special gradient observations of glaciers and the discovery of their inverses -- constant and variable, depending on the physical properties of the glaciers); A. S. Uteshev (Kazakh NIGMI /Nauchno-Issledovatel'noy Gidro-Meteorologicheskoy Institut Scientific Research Institute for Hydro-Meteorology) on "Fragmentary Utilization of Composite Methods in the Work of Agricultural Climatology in Kazakhstan."

In the resolution adopted by the Conference the usefulness of conducting discussions was noted and the necessity for still broader utilization of composite technology in climatological analysis was indi-

cated. The Conference recommended that similar developments be built on the basis of the utilization of machines and the punch cards for recording daily and hourly weather.

SCIENTIFIC CONFERENCE ON THE PROBLEMS OF ACCLIMITIZATION  
AND FEEDING OF PEOPLE IN THE FAR NORTH

-USSR-

Following is the translation of an article by A. B. Kupriyanov  
in Izvestiya Akademii nauk SSSR; Seriya geograficheskaya  
No. 2, March-April, 1961, pp. 128-130.

In Moscow from 28 November to 1 December 1960, the Scientific Conference on Problems of Acclimitization and Feeding of the People in the Far North [Kraynyy Sever] took place; it was called at the initiative of the Ministry of Public Health of the RSFSR, the Commission for Problems of the North, the Academy of Medical Sciences, and the All-Union Academy of Agricultural Science imeni V. I. Lenin. In the work of the conference co-workers of the institutes of the AS USSR and the central economic organizations and numerous delegates from local organs and scientific research establishments participated in the work of the conference.

Opening the conference, Academician V. C. Nemchinov observed the growing significance of acclimitization and feeding people in connection with the industrial harnessing of the new rayons in the North and the East of the country and the recruiting to these areas of considerable numbers of people. For the successful resolution of this problem, the speaker pointed out, it would be necessary to recruit a number of different kinds of specialists: doctors, economists, geographers, agricultural workers, and architects.

The paper of S. V. Slavin (Commission on Problems of the North) on the prospects for development of the national economy in the rayons of the north was heard with great attention. In the paper it was emphasized that the severe climatic conditions have never served as an insurmountable obstacle to the Soviet man in the north. This has found corroboration in the constant growth of the population growing from 1926 to 1959 about three times. The current progress of science and technology in our country insure all the possibilities for the creation in the north of a standard of living no lower than in the inhabited central rayons of the country. Decisive significance for the achievement of this goal belongs to the application of new efficient technology in the northern rayons where human labor is costly.

A paper of N. I. Shashkin (Institute of Labor) was devoted to the questions of the composition of permanent cadres for the newly

assimilated of the North and East. The speaker observed that now the the majority of northern and eastern rayons of the country are experiencing insufficiencies in their labor force. The cause for this is the faster development of the economies of these rayons in comparison with the central rayons. The speaker substantiated the necessity for redistributing labor resources in favor of the northern and eastern rayons from rayons similar in natural and economic conditions.

In the paper of G. M. Danishevskiy (Commission on Human Acclimatization and Regional Pathology for the Far North), human acclimatization was described as a complicated socio-biological process of active accustomization of the organism to the unusual conditions of existence. In the paper a general conclusion was drawn on the favorable tendencies in the course of acclimatization for people foreign to the area. It was remarked that the process of accustomization of the organism which lasts around one or two years, takes place, as a rule, without noticeable harm to the spirit and the physiological bearing. Potential damage to the spirit of the new settlers has been observed mainly in periods of acute atmospheric disturbances. The failure of the theoretical basis of study on acclimatization, medical meteorology, and climatology to keep pace with the demands of life was noted.

Problems of hygiene in acclimatization to the conditions of the Arctic (using the example of Tiksa) were illuminated in the paper of N. N. Litvinov, N. S. Kandrор, Ye. I. Soltyskiy (Institute for Social and Communal Hygiene AMN /Akademiya Meditsinskikh Nauk The Academy of Medical Sciences/USSR). The speakers showed on the basis of many years' research that "to assimilate the North requires not the selection of special people but the creation of appropriate living conditions for the mass of the people."

The paper of L. A. Chubukov (Institute of Geography, AS USSR) contained a bio-climatic description of the basic zones of assimilation of the North. A basic conclusion of the speaker was that the northern rayons of the country must be considered as a territory where it is necessary to use special kinds of construction, clothing, etc. which facilitate the adaptation of man.

Corresponding Member of the AMN USSR, O. P. Molchanova, said on the basis of research of the Institute of Nutrition that correctly organized nutrition fosters a considerable reduction in the illness rate in the North. The speaker showed that Arctic conditions demand an increase in the calorie count of food (400-500 calories) to produce the same work in comparison with the conditions of the middle climatic zones. The necessity for increasing the proportion of natural albumen and fats (to 35% of daily calorie intake) in the diet of the inhabitants of the North was indicated.

At the conference much attention was devoted to the questions of the creation of favorable conditions of life in the North which would facilitate adaptation. One of the most important problems in this regard is the adaptation of the living and industrial regime to the inclement nature of the north. In particular, the physiological-hygienic research of Soviet scientists in the Arctic and the Far North have shown the

of Soviet scientists in the Arctic and the Far North have shown the great role of hygienic measures, and most of all of the questions of rational planning for the settlement areas in facilitating adaptation. The basic hygienic situations in the planning of settlement areas in the North and sanitation of the dwelling place were expounded in addresses of G. N. Murav'yeva and F. F. Lampert and M. G. Makeyeva (Institute of Social and Communal Hygiene imeni A. N. Sysin). In the planning of the settlement areas, as the speakers indicated, it is necessary to proceed from the necessity of softening the severe natural climatic factors (strong winds, insufficiency of ultra-violet rays). These requirements should be assumed as a basis for determining the solidity of construction, the size of houses, the allowable space between buildings, etc.

B. V. Murav'yev and T. B. Rimskaya-Korsakova (Leningrad affiliate of the Academy of Building and Architecture) devoted their addresses to the questions of new forms of architectural-planning organization of the cities based on the newest achievements of building technology (aluminum and plastic construction, domes which cover the whole settlement). The speakers indicated, however, that "the hope of protecting man from the unfavorable circumstances all around him must not develop into a tendency of completely insulating the inhabitants against the natural conditions.

A considerable number of papers (17) were devoted to questions of supplying the inhabitants of the northern rayons with fresh agricultural products as a necessary condition for facilitating acclimatization. In the address of P. S. Zhigynov (Ministry of Agriculture, RSFSR) the present state and the prospects for development of agriculture in the rayons of the Far North were described. Describing the economics of potato and vegetable production, the speaker said that in a number of rayons of the North the cost of production is noticeably higher than the cost of shipping them from other rayons of the country; local production therefore is in many cases not desirable.

V. N. Andreyev (Scientific Research Agricultural Institute of the Far North) discussed the basic trends in the development of reindeer breeding in the Far North. For the increase of productivity of reindeer breeding, the speaker considers it necessary to strengthen its methods (improve the building of reindeer stalls, selective breeding, etc.). In the paper of I. M. Dobrotvorskiy (Scientific Research Agricultural Institute of the Far North) it was shown that the local feeding base of the Far North permits a much greater quantity of hay, silage, and pasturage for cattle than is maintained at present. For the achievement of full insurance for the people of the north of fresh milk the quantity of dairy stock should grow two-and-a-half times in the rayons of the north.

The possibilities for the newest agro-physical methods of vegetable cultivation in artificial conditions were elaborated in a number of papers. B. S. Moshkov (Institute of Agro-Physics of VASKhNIL (All-Union Academy of Agricultural Sciences imeni Lenin) convincingly showed that the full potential of getting many plant products independently of the outside conditions is inherent in the cultivation of plants in artificial light. Agronomist-Administrator A. A. Novoselov gave a



paper on the cultivation of vegetables in indoor conditions in chemical solutions (hydroponics). According to his data the method of hydroponics permits a harvest of from 5 to 10 times greater than the harvest by soil culture.

The conference heard several addresses containing descriptions and recommendations on the utilization of several kinds of wild northern plants and also disclosing the water resources. B. A. Tikhomirov (Botanical Institute, AS USSR) spoke on the utilization of the wild food plants of the Far North. "In the present time," said the speaker, "more than 50 kinds of wild flora which are used as food by the local population have been studied. It is necessary to popularize the potential of their use among the incoming people." Recommendations on the utilization of wild medicinal plants were given in the paper of A. B. Nikolayev (All-Union Institute of Medicinal Plants, AS USSR.)

The significance of natural forests and artificial forest plantations for the acclimatization of man in the North was discussed in a paper of B. N. Norin (Botanical Institute, AS USSR). The experiments conducted on the planting of trees and shrubs in a number of towns and settlements in the tundra showed that artificial forest masses in the north have a noticeable influence on the microclimate in adjacent territories. The fish resources of the northern rayons of the USSR were described in papers of P. L. Pirozhnikov (Scientific Research Institute of Lake and River Fishing) and V. P. Zaytsev (All-Union Scientific Research Institute of Marine Fishing and Oceanography).

An overwhelming number of speakers in the debates expressed their agreement with the basic propositions of the papers. In his speech, Deputy Chairman of the Council of Ministers of the Yakutskaya ASSR, Neustroyev, emphasized particularly that the questions of acclimatization are closely connected with the resolution of a whole complex of problems in the harnessing the riches of the North.

V. P. Dadykin (Karelia affiliate of the AS USSR) paid particular attention to the necessity for studying the economics of local agricultural production and noted the insufficient attention given to these questions. Interesting information on electric energy expenditures for plant cultivation in artificial light was presented in the speech of V. I. Leman (VASKhNIL).

Questions of the economy and daily life of the indigenous inhabitants were given in the report of B. O. Dolgi, V. A. Vityazeva, P. T. Moskovkin, V. I. Orlov, and others. Questions of mechanization in agricultural work in the North were treated in the work of Ye. M. Tsvetayev and D. I. Startsev.

A thorough review of foreign work done on the problem of acclimatization was made by G. A. Agranat.

It was noted in the resolutions of the conference that the problem for the greatest facilitation of the process of acclimatization of the new people demanded the joint, coordinated efforts of a great army of scientists and practical workers in the North.

The scientific consideration of the specifics of natural conditions in various rayons of the North should become the leading idea in

the differentiated working out of measures for biological and social prophylactics, and should be taken as a basis for all the sanitation measures in the North.

Active intervention in the process of acclimitization by the appropriate mixture of work and rest, type of clothing, character of nutrition, and the toughening of the organism should reduce and facilitate this process in the North.